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10/715,523	11/19/2003	Junko Ohuchi	04329.3179	4702

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EXAMINER

ARANCIBIA, MAUREEN GRAMAGLIA

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/715,523	Applicant(s) OHUCHI ET AL.	
	Examiner Maureen G. Arancibia	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 10-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 18-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-20 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/03, 10/04, 01/05</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-9 and 18-20, drawn to a plasma apparatus with a metal oxide structural body disposed therein, classified in class 156, subclass 345.47.
 - II. Claims 10-13, drawn to a plasma apparatus with a light emitting monitor, classified in class 156, subclass 345.24.
 - III. Claims 14-17, drawn to a method of ashing a resist while monitoring emission intensity of hydrogen atoms, classified in class 216, subclass 60.
2. The inventions are distinct, each from the other because of the following reasons:
 - a. Invention I is unrelated to Invention II or III. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are not disclosed as capable of use together, and have different functions. Invention I is drawn to a plasma apparatus with a metal oxide structural body therein, while Invention II is drawn to a different plasma apparatus with a light emitting monitor, and Invention III is drawn to a method of plasma processing a resist pattern while monitoring light emissions.
 - b. Inventions III and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or

(2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice another and materially different process, such as monitoring light emissions during plasma deposition or plasma cleaning of the interior of the process chamber.

3. Because these inventions are distinct for the reasons given above and the search required for any one group is not required for any of the other groups, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with David Longo on 08 August 2005 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-9 and 18-20. Affirmation of this election must be made by applicant in replying to this Office action. Claims 10-17 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Objections

6. Claim 3 is objected to because of the following informalities: it appears that the last line of the claim should read "group consisting of Cu oxide and Ag oxide." If the metal oxide body were merely coated with Cu or Ag, there would be no metal oxide to

be reduced by a hydrogen-containing gas, as recited in Claim 1. For the purposes of the following examination on the merits, the claim has been interpreted in accordance with this correction. Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. **Claims 1-3, 7-9, and 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,440,494 to Arena-Foster.**

In regards to Claims 1 and 18, Arena-Foster teaches a plasma processing apparatus, comprising: a chamber 46 in which a substrate 22 to be processed is placed; a gas introductory port (Column 2, Lines 41-44); a lower electrode 20 on which the substrate to be processed is placed; an upper electrode 50 disposed opposite to the lower electrode and which causes electric discharge in the chamber to produce a plasma (Column 2, Lines 60-64); a power supply 52 that supplies voltage between the lower and upper electrodes; and a metal oxide structural body 62 disposed in a part of the chamber. (Figures 1 and 3; Column 4, Lines 48-56)

In regards to Claims 1, 7, and 18, the particular type of gas used is a process limitation rather than an apparatus limitation, and the recitation of a particular type of gas does not limit an apparatus claim. (See *In re Casey*, 152 USPQ 235; *In re Rishoi*, 94 USPQ 71; *In re Young*, 25 USPQ 69; *In re Dulberg*, 129 USPQ 348; *Ex parte*

Thibault, 64 USPQ 666; and *Ex parte Masham*, 2 USPQ2d 1647.) Moreover, the metal oxide structural body would inherently be reduced if a hydrogen-containing gas were introduced, through a reduction-oxidation reaction. This rejection is based on the fact the apparatus structure taught by Arena-Foster has the inherent capability of being used in the manner intended by the Applicant. When a rejection is based on the inherency, a rejection under 35 U.S.C. 102 or U.S.C. 103 is appropriate. (See *In re Fitzgerald* 205 USPQ 594 or MPEP 2112).

In regards to Claims 8, 18, and 20, expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969); *In re Young*, 75 F.2d 966, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)).

In regards to Claims 2, 3, and 19, the metal oxide can be copper oxide. (Column 4, Lines 48-56)

In regards to Claim 4, the metal oxide is disposed in the vicinity of the plasma and in a position out of ion irradiation from the plasma (inside the showerhead electrode 50; Figure 1).

In regards to Claim 9, the power supply 52 is a high-frequency (*RF*) power supply. (Figure 1)

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1763

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arena-Foster in view of Japanese Patent Application Publication 08-306662 to Tsukada. The following rejection refers to the Figures and English Machine Translation of this reference.

The teachings of Arena-Foster were discussed above.

Arena-Foster does not expressly teach that the metal oxide structural body, which Arena-Foster teaches is a solid chemical source (Column 4, Lines 48-50) is disposed in a ring or cylindrical shape on the inner surface of the chamber.

Tsukada teaches that a solid chemical source 37 is disposed in a ring/cylindrical shape on the inner surface of a chamber 12. (The source 37 meets the limitations as broadly recited in Claims 5 and 6 of being of a ring shape and a cylindrical shape; Figure 1.)

It would have been obvious to one of ordinary skill in the art to form the metal oxide structural body of Arena-Foster in a ring/cylindrical shape on the inner surface of the chamber, as taught by Tsukada. The motivation for doing so, as taught by Tsukada (EMT, Paragraph 53), would have been to supply the chemical source to generate the plasma at a location close to the substrate to be processed, and thereby increase the efficiency of the process.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 6,656,540 to Sakamoto et al. teaches a vapor deposition apparatus with a silver source. U.S. Patent 5,953,634 to Kajita et al. teaches coating chamber components with the same metal as is used in a deposition process. U.S. Patent 6,010,749 to Goldman teaches a vapor deposition apparatus with a copper oxide or silver oxide source. U.S. Patent 5,178,739 to Barnes et al. teaches a cylindrical chemical source 14.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maureen G. Arancibia whose telephone number is (571) 272-1219. The examiner can normally be reached on core hours of 10-5, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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